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NOTES FROM PACIFIC COAST OBSERVATORIES

THE SPECTRUM OF COMET *b* 1919 (BRORSEN-METCALF)

Two spectrograms were recently secured here of Comet *b*, 1919. The first plate, exposed on the morning of October 17th, was rather weak, due to a hazy sky, and a second exposure was made on the following morning under a better sky. The second plate was measured and the results are tabulated below. In a parallel column will be found the main details in the spectrum of Comet *b* 1914 (Zlatinsky), observed with the same instrument. The spectrum of the early comet is reproduced in *Lowell Observatory Bulletin* No. 74, to which the reader may wish to refer, since the spectral resemblance is fairly close, altho the emissions from near $\lambda 4000$ to $\lambda 4100$ are weaker in the present object. The continuous spectrum is faint in the Brorsen-Metcalf comet. This comet passed perihelion October 16th, and its distance from the Earth was about nine-tenths the astronomical unit and increasing.

| Comet <i>b</i> 1919 Brorsen-Metcalf | Comet <i>b</i> 1914 Zlatinsky | Remarks |
|--|----------------------------------|--|
| 5163 | 5164 | 3rd carbon band, partially resolved |
| 5126 | 5128 | 3rd carbon band, poorly resolved |
| 4735.2 | 4735.3 | 4th carbon band, strong, clear |
| 4714.9 | 4714.2 | 4th carbon band, strong, clear |
| 4697.1 | 4695.7 | 4th carbon band, strong, clear |
| 4677 | 4679 | 4th carbon band, blend |
| 4544 | 4543 | Region of 1st cyanogen band, weak |
| 4371.1 | 4370.5 | “ “ weak, but distinct |
| 4364.1 | 4363.9 | “ “ fairly strong, distinct |
| 4313.5 | 4313.3 | “ “ very sharp |
| 4214.6 | 4214.9 | 1st edge, 2nd cyanogen band, strong |
| 4198.2 | 4195.9 | “ “ diffuse |
| 4073.8 | 4073.7 | Unidentified, weak |
| 4066.6 | 4066.5 | Unidentified, weak |
| 4050.6 | 4051.5 | Unidentified, weak |
| 4042.1 | 4042.4 | Unidentified, weak |
| 4020.3 | 4020.2 | Unidentified, weak |
| 4016.1 | 4014.4 | Unidentified, weak |
| 3881.1 | 3881.1 | 1st edge, 3rd cyanogen band, very strong |
| 3868.2 | 3868.3 | “ “ wide blend |

The linear scale of these spectra, 7 mm. from $\lambda 5165$ to $\lambda 3883$, and the fluting nature of the bands are against accurate wavelength determinations. The agreement between the results for the two comets is as good as might be expected and the occasional difference found should not be interpreted as implying necessarily real difference in the bands.

I am indebted to Mr. O. H. Truman for reducing the measures and for computing the radial velocity corrections to the wavelengths.

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STATIONARY SODIUM LINES IN SPECTROSCOPIC BINARIES¹

From the nature of a spectroscopic binary it seems reasonable to expect that the velocities given by the separate star lines on a single plate should be in mutual agreement. This has been found to be the case normally, the displacements of the star lines on any one plate corresponding to the same velocity. However, the H and K lines of calcium occasionally offer an exception to this usual behavior. In a number of early type spectroscopic binaries these lines remain practically stationary thruout a periodic variation of large amplitude in the other star lines, and moreover, they appear sharp and narrow in contrast to the broad and hazy lines characteristic of this class of spectra.

A recent investigation at the Lick Observatory has shown a similar peculiarity in the D₁ and D₂ lines of sodium. Two stars, β *Scorpii* and δ *Orionis*, were studied, these having been selected as representative of the class of variable velocity stars showing stationary H and K lines. The spectrograms which form the basis of this work were taken in the visual region with a three-prism spectrograph attached to the thirty-six-inch refractor. In this region of the spectrum but three oscillating lines were measurable and, due to their poor definition, the velocities determined from these are subject to large uncertainty. The D₁ and D₂ lines of sodium are quite sharp and better suited for exact measurement, D₂ being uniformly better than D₁.

The results of the investigation are summarized below.

1. The D lines of sodium appear sharp and narrow on all the spectrograms, resembling H and K in this particular.
2. Within the limits of observational error these lines remain stationary thruout the period. A maximum departure of 21 km. from the mean velocity can be attributed to accidental error, since the character of the lines on some of the plates makes their measurement quite inaccurate and since in this region the dispersion is small.

¹A detailed account of this investigation is given in *Lick Obs. Bull.*, **326**.